DOCUMENT RESUME

ED 099 421 95 TM 004 098

AUTHOR	Davis, Benjamin G.
TITLE	Design and Implementation of a Discrepancy Analysis Model for Education Programs.
INSTITUTION	RMC, Inc., Bethesda, Md.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	[Apr 74]
CONTRACT	OEC-0-7[illegible]-3713
NOTE	26p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, Illinois, April 1974). Not available in hard copy due to marginal legibility of original document
EDRS PRICE	MF-$0.75 HC Not Available from EDRS. PLUS POSTAGE
DESCRIPTORS	Comparative Analysis; *Decision Making; *Educational Programs; *Evaluation Methods; Management Information Systems; *Program Evaluation; Questionnaires
IDENTIFIERS	National Center Improvement Educational Systems

ABSTRACT

The management and evaluation of education programs requires a timely, accurate information system. The discrepancy analysis model described aids in providing this information in a format that may be processed and yields the method by which such a system may be developed and implemented. Building from specific statements of expected project performance, this study showed how questionnaires may be developed, analysis plans prepared, and analytical reports produced to enable a reviewer to quickly learn the status of an education project. The system provides two basic types of data for decision-makers: basic descriptive information to permit statistical summaries of program operation to be prepared and reviewed, and operational consistency data which allow decision-makers to review project operations and to function by management-by-exception, concentrating their efforts on those projects most in need of technical assistance. (Author)

ED 069421

DESIGN AND IMPLEMENTATION OF A DISCREPANCY ANALYSIS MODEL FOR EDUCATION PROGRAMS

Benjamin G. Davis

RMC Research Corporation
Suite 1300
7910 Woodmont Avenue
Bethesda, Maryland 20014

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY.

TM 004 098

BEST COPY AVAILABLE

BEST COPY AVAILABLE

PREFACE

The research which led to the development and implementation of the system described in this report was supported in part by Office of Education contract number OE/OEC-0-71-3713. As the Office of Education provides a nonrestricting atmosphere in which research may occur, the conclusions are those of the author and not necessarily those of the Office of Education. Special thanks go to Drs. Robert Hall and Francis Corrigan of the U.S. Office of Education and Mr. Robert Crosby of RMC Research Corporation for their helpful suggestions and criticisms throughout the study.

BEST COPY AVAILABLE

Introduction

Two basic types of decisions must be made with regard to operational education programs and projects--funding/refunding and project monitoring. In order to properly make these decisions, certain types of information are necessary. Among the types of information required to support the necessary decisions are a description of actual ongoing project and program activities, the effect of project and program activities, and (for training programs) manpower needs and supplies. Each of these information needs must be supported by an information system that includes process evaluation, impact evaluation, and special studies. Special studies allow the decision-maker to determine the need for various programs. Impact evaluation serves to identify those programs or projects which are having the greatest (and poorest) qualitative impact. Process evaluation, on the other hand, is important because it is necessary to know about the characteristics of projects that have a positive (or negative) impact so that these projects may be replicated. Without a thorough knowledge of project characteristics, it would be impossible to replicate successful projects in other institutions and to avoid the failures that inevitably accompany the development of a series of new projects. In addition, process evaluation allows program managers to know if projects are carried out within the spirit of program guidelines.

Most evaluation systems as described in the literature include process evaluation as an integral part of the overall scheme. For instance, the evaluation model as developed by the Center for the Study of Evaluation (CSE) at UCLA includes the following evaluation components:

- needs assessment
- program planning
- implementation evaluation
- progress evaluation, and
- outcome evaluation

BEST COPY AVAILABLE

Process evaluation, in the CSE context, includes both implementation and progress evaluation. A second major evaluation model as developed by Daniel L. Stufflebeam is the CIPP model which includes as evaluation components:

- context evaluation,
- input evaluation,
- process evaluation, and
- product evaluation.

In both of these systems, process evaluation is assigned the role of reporting data to decision-makers to control project operations.

As has been pointed out in the literature, process evaluation has three basic objectives:

1. "to detect or predict defects in the procedural design or its implementation during the implementation stages,
2. "to provide information for programmed decisions, and
3. "to maintain a record of the procedure as it occurs."[1]

These basic objectives are met with the model described in this report. The methodological approach described above has been applied to a series of educational personnel training programs in the U.S. Office of Education and the application of the process evaluation segment of the overall evaluation system is described in this report.

Under the Education Professions Development Act (EPDA) of 1967, the National Center for the Improvement of Educational Systems (NCIES), formerly the Bureau of Educational Personnel Development (BEPD), of the Office of Education, has been authorized to fund a large number of training programs and projects designed to reduce the critical shortages of many types of educational personnel and to offer opportunities for improving as well as reforming educational systems. These programs cover a wide spectrum of the education professions. Specialists in early childhood

---

1. "Evaluation types and a Model for Evaluation," Stufflebeam, Provus, Gube, et al., in Educational Evaluation and Decisionmaking, Itasca, Illinois, 1971.

BEST COPY AVAILABLE

development, special education, bilingual education, and vocational education have been trained. In addition, projects that foster educational innovations such as Teacher Corps, School Personnel Utilization, and Urban/Rural School Development have been funded. Since the Center must ensure that all of the diverse projects being funded are operating according to program guidelines and are progressing toward their objectives, it was necessary that their activities be monitored and evaluated. Accordingly, a contract was awarded to develop and implement for the Center's programs a process evaluation system to assist decision-makers.

This report documents a two year effort to develop and implement a process evaluation system for the programs of the National Center for the Improvement of Educational Systems (NCIES) of the U.S. Office of Education. In the first year, the evaluation system was designed, questionnaires were developed, and computer programs were written. This system was then pilot-tested in 80 projects in eight NCIES programs across the country. The second year's effort involved the full-scale implementation of the system in 438 projects in 12 NCIES programs. The NCIES programs included in the study are:

- Bilingual Education
- Early Childhood
- Educational Leadership
- Pupil Personnel Services
- School Personnel Utilization
- Special Education
- Teacher Corps
- Teacher Development for Desegregating Schools
- Training of Teacher Trainers
- Urban/Rural School Development
- Vocational Education Part 552
- Vocational Education Part 553

BEST COPY AVAILABLE

Methodology

The basic approach to the system design relies on obtaining certain basic information about each program and project. The logic for the process evaluation system is illustrated in Figure 1. Specifically, each Center program has developed a set of program guidelines (A) that projects are expected to follow and which, it is believed, will result in the successful accomplishment of overall program objectives. These program guidelines provide an overall description of the goals and approaches of the program as a whole as well as providing a basic guide for project development. In addition, program guidelines contain a series of program conditions (B), which are specific statements of expected project performance.

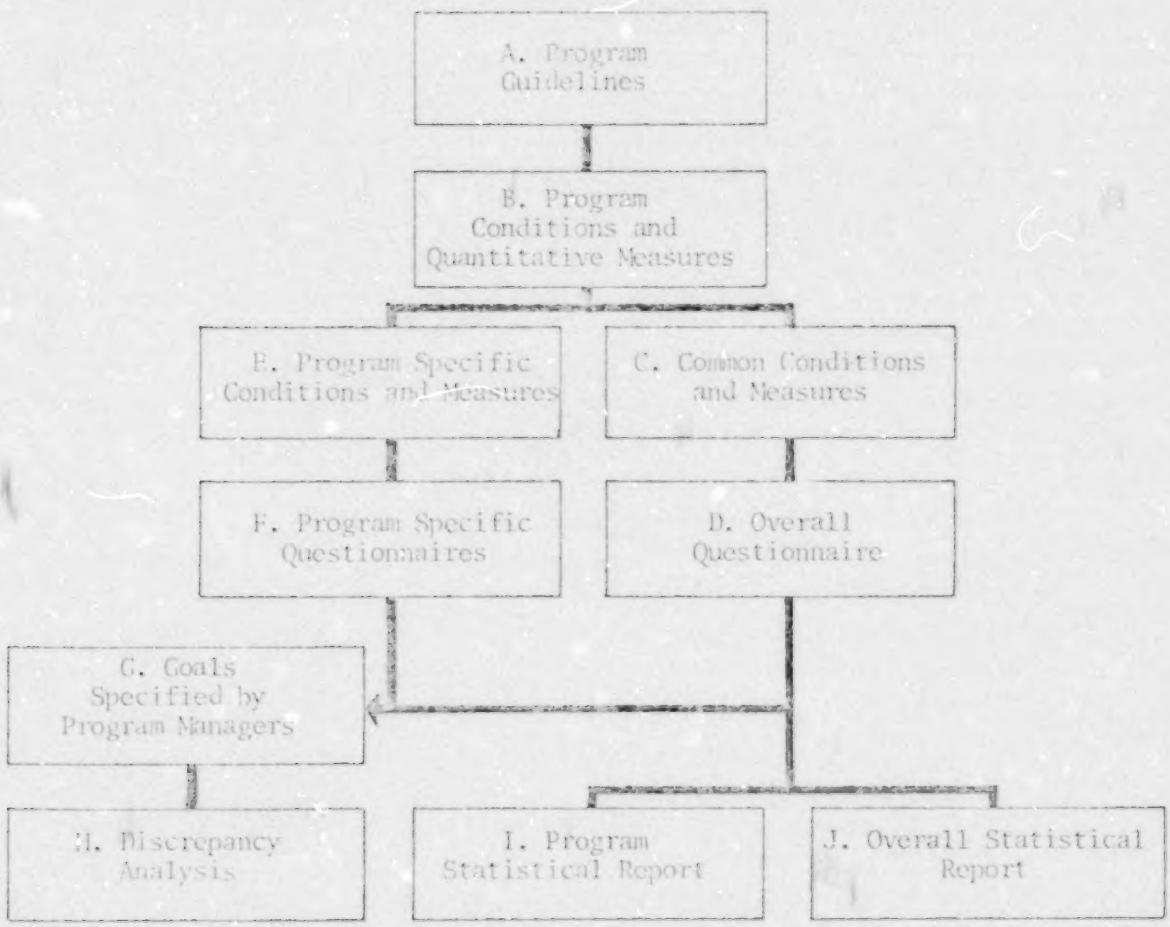
A. Program Guidelines
B. Program Conditions and Quantitative Measures
E. Program Specific Conditions and Measures
C. Common Conditions and Measures
F. Program Specific Questionnaires
D. Overall Questionnaire
G. Goals Specified by Program Managers
H. Discrepancy Analysis
I. Program Statistical Report
J. Overall Statistical Report

Figure 1: LOGIC OF THE DISCREPANCY ANALYSIS METHODOLOGY

BEST COPY AVAILABLE

An example of a program condition from the Teacher Corps program is:

> "Each project will develop a systematic management plan to facilitate program development, evaluation, and modification."

and from the Early Childhood program:

> "Participants should be provided with opportunities to develop expertise in working with the community, identifying, understanding, and working within decision-making structures."

For each program condition, quantitative measures (B) were developed and reviewed and approved by program managers. If data are obtained on these measures of program conditions, the program specialist or evaluator can determine whether or not the conditions are being met. These measures might take any format from a simple Yes-No response ("Has the project developed a systematic management plan?") to a numerical response ("Indicate the number of participants receiving practicum training.") to a lengthy open-ended response ("Describe overall project training strategies.") which would then be read and coded. Frequently, a number of data items would be required to adequately measure how well a project was addressing the data element in question.

Because many education programs have a number of similar objectives (e.g., the recruitment of minorities, community involvement, etc). and since it was necessary to gather similar baseline descriptive data on all programs and projects, it was possible to construct a list of Center-wide common conditions and measures (C). The questions designed to address these common conditions were placed in an overall questionnaire (D) with the data requested organized into seven basic areas:

- information concerning participants, their characteristics, and recruitment;
- data on the length and nature of the training provided by the project;
- a description of the practicum;
- information concerning the amount and sources of funding;

BEST COPY AVAILABLE

- data on project advisory councils;
- project self-evaluation information; and
- a description of the dissemination of project information.

While all education programs have many similarities, each Center program has been established to foster educational reform from a different viewpoint. Thus, each program had a number of guidelines which were program-specific. For those conditions that were program-specific (E), quantitative measures were developed and placed in a series of program-specific questionnaires (F), with a separate questionnaire for each of the twelve programs included in the study.

The next step was the one that caused the most difficulty for the development of the evaluation system, as program managers were asked to establish a specific goal (G) for each program condition/measure against which to gauge project performance. While for the most part program managers were reluctant to establish quantitative standards for the measurement of project success or failure, they all ultimately did so. It is believed that their reluctance to establish goals for project performance was borne out of a fear that poor project performance would be interpreted as a failure on the part of the program manager himself. It was because of this factor that program managers were asked to establish the goals for their own programs. For the most part, the outside evaluator who was thoroughly familiar with the program could have established a set of goals closely approximating those developed by program managers. This, however, would have been more an evaluation of the program as a whole than an evaluation of the projects.

For most of the program condition/measure combinations, program managers were able to establish a goal. In some cases, however, it was either impossible for the program manager to state a goal as the program condition/measure combination was descriptive in nature or the program manager was unwilling to establish a goal. Where a goal was stated by the program, the data reported by the projects were compared against the goal. Where no goal was stated, the project data were compared against the program average. For those projects equaling or exceeding

BEST COPY AVAILABLE

the goal, the data were presented as reported. For those project whose data were less than the goal, the data were highlighted by placing parentheses around it, as: (DATA). It should be noted at this point that some projects were established in order to address a specific need and thus may not have met all of the program goals and yet be considered a successful project. Additionally, local conditions in the field may have prevented the attainment of one or more of the goals by the project regardless of the effort put forth. Nonetheless, the concept of a program/project goal allows program specialists and evaluators to function by management-by-exception, concentrating their analysis and efforts on those projects that do not meet the program goal.

Examples of the program goal concept are that the Early Childhood program set a goal of having participants spend at least 50 percent of their practicum time in contact with parents and the community and the Special Education program set a goal of having 100 percent of the participants receive a job in special education upon project completion. Goals thus stated (in quantified terms) permit an objective analysis that would be less feasible with the more generalized descriptive goals that are typically utilized in education programs.

Summarizing the overall analysis approach, then, actual performance can be compared against planned performance as made explicit in quantitative goals for all conditions in the program to form a discrepancy analysis (H). In addition, program statistical reports (I) and overall statistical reports (J) could be produced from the data base.

In addition to the above surveys designed to be sent to project directors, a separate survey was developed to be sent to a sample of participants in the projects surveyed. This participant questionnaire was designed to collect information on the following areas:

- expectations about the project,
- participant evaluation,
- project activities,
- project advisory council, and
- areas of project strength and weakness.

BEST COPY AVAILABLE

In addition, information was collected on participant demographics (marital status, age, sex, race or ethnic background, education, and prior occupation). These data were collected to permit cross-tabulations to be developed in order to determine whether there was any significant difference between demographic groups and their responses to the project questions. Thus, one could determine for a given program, or for the Bureau as a whole, whether satisfaction with the program varied by demographic variable.

BEST COPY AVAILABLE

Survey Implementation

In all, a total of 14 questionnaires were developed consisting of:

- Part A - Common overall questionnaire - (Project level)
- Part B - Twelve separate program specific questionnaires - (Project level)
- Participant questionnaire (Individual participant)

The project questionnaires were mailed to all project directors in the 12 programs in the middle of the project year. An overall survey response rate of 84 percent was achieved for the 438 projects in the survey, with six of twelve programs achieving over a 90-percent response rate as may be seen in Table 1 below:

Table 1

RESPONSE RATE FOR PROJECT QUESTIONNAIRES

Program	Number of Projects	Number of Projects Responding	
		Number	Percent
Bilingual Education	13	11	85
Early Childhood	47	39	83
Educational Leadership	15	14	93
Pupil Personnel Services	41	37	88
School Personnel Utilization	18	17	94
Special Education	39	36	92
Teacher Corps	70	63	90
Teacher Development for Desegregating Schools	43	40	94
Training Teacher Trainers	32	29	91
Urban/Rural School Development	24	17	71
Vocational Education Part 552	18	16	89
Vocational Education Part 553	78	49	63
Total All Programs	438	368	84

BEST COPY AVAILABLE

In contrast with the project questionnaires, the participant questionnaire was distributed on a sample basis with the questionnaires mailed to selected project directors (projects were selected on a probability proportional to size (PPS) basis), who were asked to distribute them to participants according to a specific simple random sample procedures. Project directors were asked to return the complete list of participants in the project, indicating those selected, thus permitting verification that the proper selection procedure was used and allowing follow-up on non-respondents. An evaluation of the procedures utilized and the responses received indicated that a representative sample of program participants was drawn.

The use of this two-stage sampling procedure yielded an overall participant survey response rate of 56 percent of the 3,273 participants in the sample that represented the total 27,496 participants in the programs for the year of this study. The response rates by program for the participant questionnaire may be seen in Table 2.

Table 2

RESPONSE RATES FOR PARTICIPANT QUESTIONNAIRE

Program	Number of Participants in Program	Number of Participants Selected	Number of Participants Responding	Response Rate (percent)
Bilingual Education	408	172	113	65.7
Early Childhood	3436	313	171	54.6
Educational Leadership	339	150	96	64.0
Pupil Personnel Services	665	152	111	73.0
School Personnel Utilization	2548	456	262	57.5
Special Education	3006	327	194	59.3
Teacher Corps	2409	258	136	52.7
Teacher Development for Desegregating Schools	1548	279	157	56.3
Training Teacher Trainers	3035	410	211	51.5
Urban/Rural	2057	358	173	48.3
Vocational Education 552	253	93	85	91.4
Vocational Education 553	7792	305	136	44.6
Total - 12 Center Programs	27496	3273	1845	56.5

BEST COPY AVAILABLE

Computer Software

Because of their vastly different nature, two separate computer software systems were utilized for the project and participant questionnaires. The participant questionnaire was developed to be analyzed in a standard cross-tab format and hence was processed by a commercial computer firm. The project questionnaires, on the other hand, were highly specialized both in their design and in the types of analyses that would be applied, hence a system of specialized programs was developed. This system consists of a collection of COBOL language programs (designed to be compatible with the OS/IBM computer system) and system sorts. It was designed for and implemented on the IBM System 360/Model 65 and 370/Model 155 using the IBM distributed OS-MVT Software Computer System and required the following peripheral equipment:

- an IBM on-line 1403 printer,
- an IBM on-line 2540 card reader,
- at least one IBM 2314 disk storage device, and
- at least three IBM 729 magnetic tape units.

In addition, this system can also be loaded and executed from a remote job entry terminal such as the Data 100 or IBM 2781 RJE terminal. The system was designed to produce approximately 47 predesigned tables in 31 different presentation formats in a generalized manner and 12 program discrepancy analysis reports. The PEQ-DPS was intentionally designed in an open-ended and general fashion so that additional coding or totally new output table generation procedures could be added to the system framework in a timely and easy manner.

Structurally, the programs can be considered to consist of various independent operational modules that perform some function in the questionnaires during this flow through the system stream. At the highest level of consideration, the system contains three major modules. They are:

1. Editing and maintenance of the questionnaire data base,
2. Report printing file preparation, and
3. Generation of the required tables.

BEST COPY AVAILABLE

Within each of these modules, software programs perform prescribed operations on the data. During execution of the edit module, the edit program performs various numeric and syntax data checks. Further downstream, the update program of the maintenance module not only produces data base records but also executes user-directed data range checks. Still further downstream, records are extracted, summed, and, finally, in the last module, data are presented in output table reports. Because of the number of data fields included and the number of projects, tables, and program goal comparisons, a system storage capacity of at least 250K is required for the complete run although modules such as edit, update, etc. may be accomplished with much less storage capacity.

A simplified flow diagram for the software system may be seen in Figure 2.

It should be noted that the comprehensive package of computer programs were developed because of the large number of projects surveyed and the very large instruments that were developed. For a small number of projects and for instruments that request a small number of data items, hand processing would be feasible and would result in a significant cost savings. The great flexibility designed into the software system described above would be lost, however, and this must be weighed in the discussion as to the processing mode to be adopted.

BEST COPY AVAILABLE

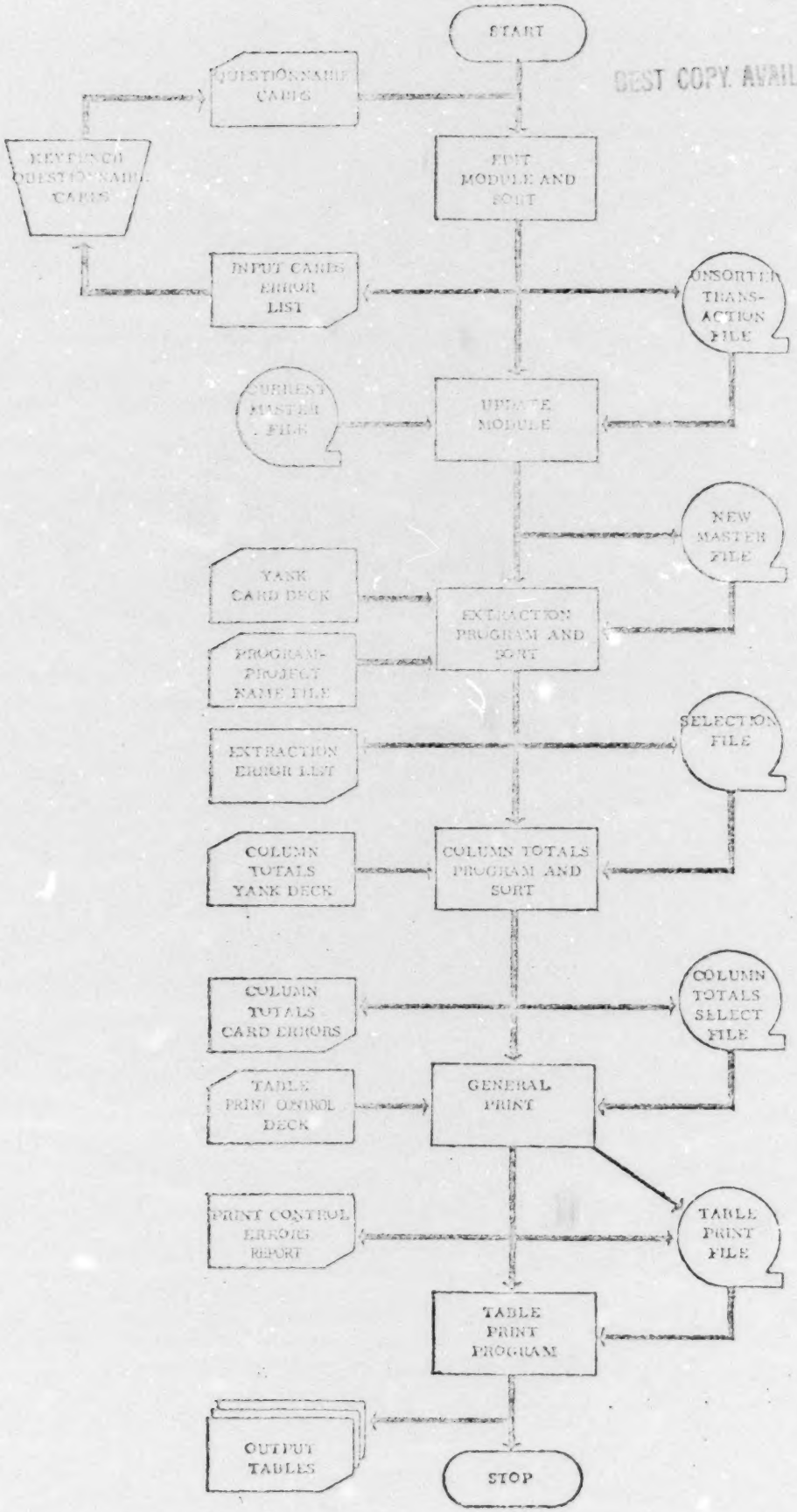

Figure 2: DATA THROUGHPUT FLOW

BEST COPY AVAILABLE

Analysis and Presentation of Data

The development of the analysis plan for any evaluation system must precede the development of the instruments and the sample. This sequence is essential if data are to be collected correctly. The development of instruments prior to the existence of an analysis plan will result in data gaps or the collection of extraneous data. Thus the analysis plan was prepared very early in the development of this study.

The basic approach to the design of the analysis plan was to depend heavily on the needs of educational decision-makers to determine the specific analysis procedures. It is believed that the ultimate use of the data should be the driving force of the analysis rather than the format and form in which it is most convenient to collect it. If the data collected are not published in a form usable by various levels and types of decision-makers, their ultimate purpose is seriously diluted. This approach was inherent in the overall system design, relying as it did on program conditions and goals. The analysis for each of the three types of questionnaires, while interrelated, was developed along separate lines.

As described previously, the data collected on the participant questionnaires were processed in cross-tab format providing summaries of the data in a series of approximately twenty tables. The data were summarized both for each individual program and for the Center (all twelve programs) as a whole. The Center data were processed using the program as the basic variable while the basic variable for the program-level data was a series of participant demographics (age, race, sex, education, and prior occupation). The basic question about which data were analyzed were participant expectations about the project, participant evaluation, project activities, project advisory council, and areas of project strength and weakness. A sample of the data output may be seen in Table 3.

The Part A questionnaire data were processed in a descriptive manner. The goal with this data was to present statistical descriptions of the projects, programs, and the Center as a whole. It was designed to

Table 3

SAMPLE OF PARTICIPANT SURVEY OUTPUT

SURVEY OF PARTICIPANTS IN EDPA-SUPPORTED PROJECTS
CONDUCTED FROM JULY 1, 1971 TO JUNE 30, 1972
TEACHER CORPS

	TOTAL	MARITAL STATUS: SINGLE	MARRIED	OTHER	NO ANS	AGE: UND 21	21-30	31-40	41-50	OVR 51	NO ANS	SEX: MALE	FEMALE	NO ANS
Q.2 WHAT DO YOU THINK THE PROJECT IS TRYING TO ACCOMPLISH														
TRAIN TEACHERS TO WORK WITH DISADVANTAGED	68.9% 177	66.4% 93	68.9% 73	100.0% 11	-	60.0% 6	67.4% 153	83.3% 10	100.0% 8	-	-	66.1% 77	69.4% 100	-
CHANGE TRADITIONAL METHOD OF TEACHER TRAINING	14.0% 36	10.0% 14	17.9% 19	27.3% 3	-	20.0% 2	14.5% 33	8.3% 1	-	-	-	11.2% 13	16.0% 23	-
INCREASE INVOLVEMENT OF PARENTS IN CHILDRENS EDUCATION	1.9% 5	1.4% 2	1.9% 2	9.1% 1	-	-	1.8% 4	-	12.5% 1	-	-	2.7% 3	1.4% 2	-
DEVELOP COMPETENCY-BASED PROGRAMS	1.9% 5	3.6% 5	-	-	-	10.0% 1	1.8% 4	-	-	-	-	1.8% 2	2.1% 3	-
INTRODUCE DIFFERENTIATED STAFFING	.8% 2	-	1.9% 2	-	-	-	.9% 2	-	-	-	-	1.8% 2	-	-
IMPROVE QUALITY OF CHILDRENS EDUCATION	7.0% 18	11.4% 16	-	18.2% 2	-	-	7.9% 18	-	-	-	-	5.3% 6	8.3% 12	-
ALL OTHER ANSWERS	13.6% 35	14.3% 20	14.2% 15	-	-	10.0% 1	14.1% 32	16.7% 2	-	-	-	15.0% 17	12.5% 18	-
NO RESPONSE	.8% 2	.7% 1	.9% 1	-	-	-	.9% 2	-	-	-	-	1.8% 2	-	-
TOTALS	108.9% 257	107.3% 140	105.7% 106	154.6% 11	- %	100.0% 10	109.3% 227	108.3% 12	112.5% 8	- %	- %	108.0% 113	109.7% 144	- %

Note: Numbers may add to more than 100% as multiple responses were permitted.

BEST COPY AVAILABLE

BEST COPY AVAILABLE

provide information to decision-makers in seven basic areas: information concerning participants, their characteristics, and their recruitment; data on the length and nature of the training provided by the projects; a description of the practicum; information concerning the amount and sources of fundings; and descriptive data concerning advisory councils, project self-evaluation, and the dissemination of project information. In addition to providing a descriptive report concerning project activities, this approach allows decision-makers to begin to view the quantitative (as opposed to the qualitative) impact of the programs. Data concerning the number and characteristics of trainees and the amount and types of training permit a measure of the quantitative impact that the program will have. A sample of the output from the basic statistical package may be seen in Table 4.

While the participant questionnaire data were cross-tabulated and the statistical data reported in a series of tables designed to fill specific information needs, the discrepancy analysis data were treated somewhat differently. As described above, each program manager was asked to specify a goal for each combination of program conditions and quantitative measures. For most of the combinations, programs established a goal to assess the successful performance by a project in process terms. Where a goal was stated by the program, the data reported by each project were compared against the goal. Where no goal was stated, the project data were compared with the program average. When the data reported by a project did not equal or exceed the goal established by the program, the data were highlighted by placing parentheses around it, allowing analysts to quickly determine where assistance was needed by the projects. The data, then, were reported on a program basis with the project serving as the basic unit of analysis. A sample of the data output that was produced may be seen in Table 5.

In addition to the project-by-project reporting of the data, two types of summaries were developed. The first summary was the Project Discrepancy Analysis Summary. This summary was designed to indicate the

Table 4

SAMPLE STATISTICAL SURVEY OUTPUT

AIMS AND GOALS OF PROJECT TRAINING

PROGRAM NAME: TEACHER CORPS DATE OF REPORT JANUARY 30, 1972

NAME OF PROJECT		NEW COURSES DEVELOPED		STATE CERTIFICATION REQUIREMENTS CHANGED			AIMS OF TRAINING				OBJECTIVES AND STRATEGIES								
		NUMBER OF CREDIT HOURS ASSIGNED FOR PROJECT PARTICIPANTS (1)	NUMBER OF CREDIT HOURS FROM COURSES OPEN FOR OTHER STUDENT (2)	PROJECT HAS CHANGED STATE CERT REQUIREMENT (3)	CHANGES IN CUR 3 WERE UNDERSTANDING PART ONLY (4a)		INCR PARTIC IN PROJ OF LOW INCOME STUDENTS (5)		INCR PARTIC UNDERSTANDING OF HANDICAPPED STUDENTS (6)		PROJECT OBJECTIVES (7)					PROJECT STRATEGIES (8)			
LIVINGSTON	AL	40	4	NO	NO	NV	YES	V	YES	NV	4	6	2	2	2	3	9	4	
FLAGSTAFF	AZ	12	6	YES	NO	V	YES	V	NO	NV	7	4	4	3	6	3	2	1	
HAWAII	GA	12		NO	NO	NV	YES	V	YES	V	6	5	7	6		3	2	6	
LOS ANGELES	CA	90		NO	NO	NV	YES	V	NO	NV	1	4	5	6	7	7	3	3	
SACRAMENTO	CA	6	6	NO	NO	NV	YES	V	NO	NV	4	9	6	2	6	4	2	9	
SAN FRANCISCO	CA	24		NO	NO	NV	YES	V	NO	NV	5	8	4	4	6	3	1	9	
SAN DIEGO	CA	18		NO	NO	NV	YES	V	NO	NV	8	4	6	2		2	9		
SANTA CRUZ	CA	33	6	YES	YES	V	YES	V	NO	NV	1	8	6	9	6	3	1	9	
STOCKTON	CA			YES	YES	V	YES	V	YES	NV	4	2	4	5	2	2	9	2	
ALAMEDA	CO	16		NO	NO	NV	YES	V	NO	NV	4	4	5	2	5	7	7	9	
HARTFORD	CT	18		YES	YES	V	YES	NV	NO	NV	5	2	2	3	3	2	3	9	
ATLANTA	GA	15	12	YES	NO	V	YES	V	NO	NV	9	1	4	6	5	5	7	3	
CHICAGO	IL	13		NO	NO	NV	YES	V	YES	V	8	4	4	5	8	2	1	3	

FOOTNOTES:

1. THE V OR NV SHOWN IN COLUMNS 4,5,6 6 ABOVE INDICATE WHETHER A 'YES' RESPONSE GIVEN BY A RESPONDENT WAS VERIFIED (V) OR NOT VERIFIED (NV) AS BEING VALID BY HIS RESPONSE TO A FOLLOW-UP QUESTION
2. PROJECT OBJECTIVES:
   1. DEVELOP SPECIFIC SKILLS IN PARTICIPANTS
   2. INTRODUCE NEW TEACHING METHODS
   3. IMPROVE COGNITIVE OR AFFECTIVE ABILITY OF YOUTH
   4. IMPROVE OR CHANGE UNIVERSITY TRAINING
   5. IMPROVE OR CHANGE THE SCHOOL SYSTEMS
   6. INVOLVE COMMUNITY IN THE EDUCATIONAL PROCESS
   7. INCREASE OVERALL SUPPLY OF EDUCATION PERSONNEL
   8. INCR SUPPLY OF EDUC PERSNL FOR URBAN-LOW INCOME
   9. ALL OTHERS
   0. NO OBJECTIVES STATED
3. PROJECT STRATEGIES:
   1. INTERNSHIP OR PRACTICUM
   2. CHGND OR UNIV, COMM, & SCHOOL SYSTEM IN TRAINING
   3. SPECIFIC TRAINING TECHNIQUES
   4. INSTRUCTIONAL WORKSHOPS, SEMINARS, ETC
   5. USE OF RESEARCH PERSONS AT CONDUCT OF TRAINING
   6. PARTICIPANTS AS AGENTS OF CHANGE IN INSTITUTION
   7. NEEDS ASSESSMENT AND PROJECT SELF-EVALUATION
   8. FORMAL UNIVERSITY OR DEGREE-ORIENTED TRAINING
   9. ALL OTHERS
   0. NO ACTUAL STRATEGY STATED

BEST COPY AVAILABLE

BEST COPY AVAILABLE

Table 5

SAMPLE DISCREPANCY ANALYSIS OUTPUT

Program Conditions	Measures	GOAL	ACCOMPLISHMENT	DISCREPANCY	Project Number 1	4	5	7	8	9
	(2) The percent of the responsible person's time allocated for community-based education activities.	25%	17%		30	50	100	100	50	100
	(3) The affiliation of the responsible individual				2	3	1	2	2	2
	Note: 1 = School District staff									
	2 = College staff									
	3 = Other									
	(4) The background of the responsible individual				3	1	2	2	2	2
	Note: 1 = Formal credentials in urban affairs									
	2 = "Grass roots"									
	3 = Member of social welfare agency									
	4 = Other									
E. Community 1. The program will provide support and training for youth and parent tutoring programs during and after school hours.	(1) The percent of teams that are participating in Youth-Tutoring-Youth and Parent Tutoring programs	75%	72%			(43)	(57)		100	
	(2) The percent of teams that received training for Youth-Tutoring-Youth and Parent Tutoring programs	75%	93%			(43)			100	
2. The program will encourage teachers, corpsmen, and regular school staff to develop and support community-based education projects, including store-front learning centers, tutor training, and similar educational activities outside the school.	(1) The number of hours per week corpsmen spend in community-based education activities.	10	9		(4)	12	(8)	10	(6)	10
3. University instructors will teach and provide support to corpsmen and regular school staff at school and community sites.	(1) Average number of credits taught at practicum site including credits for practicum.	12	10		11	6	8	50		12
	(2) Indicate whether college personnel observe and provide feedback to corpsmen in actual or simulated situations.	YES	YES	90	YES	YES	YES	YES	(NO)	YES

BEST COPY AVAILABLE

BEST COPY AVAILABLE

BEST COPY AVAILABLE

percent of the program conditions/quantitative measures that each project successfully met as established by the program goals. While each program condition does not necessarily carry an equal weight with program managers, in general it may be said that the higher the number of conditions met, the more successful the project was in meeting the program objectives. A series of tables showing the ranking of projects in each program was developed. The utility of this summary was that it permitted program managers to quickly determine which of these projects were the weakest in terms of meeting program goals. It should be remembered at this point that in order to make final decisions concerning the performance of a given project, it is not sufficient to rely solely on the projects index of operational consistency but is necessary to combine this with a knowledge of the (special) objectives of the project, the environment in which it must function, and other information concerning the project's effectiveness.

The second summary was the Measure Discrepancy Analysis Summary. This summary indicated the percentage of projects that successfully met each condition/measure and thus was indicative of how successful the total program was in meeting its own self-established goals.

Finally, as a check on the ability of the mail questionnaires to collect accurate data, field site verification visits were scheduled to a small sample of the projects. The approach taken was not only to independently collect the data requested in the questionnaire from the basic data sources available to respondents, but also to request similar pieces of data from a variety of sources. Among the individuals that could be interviewed at a given site were the project director, project staff, participants, college representative, school representative, and community representative. Since in most cases the project director provided the data reported on the questionnaires, the verification directed to him concerned his interpretations of certain questions and the general problems he had in responding. Other types of persons were selected to provide other views of the questionnaire information and

BEST COPY AVAILABLE

in many cases, more than one type of person was interviewed for a given question to be verified. The results of the validity study indicated that project directors were able to provide the type of information requested and that the data provided were accurate.

BEST COPY AVAILABLE

System Limitations and Further Steps to be Taken

The system as discussed above, while good in its ability to collect both descriptive and process evaluation data, does have some limitations.

1. Questionnaire design is not a one-time occurrance. Questionnaires must be revised annually as program guidelines are changed. Because the Part A or common instrument was designed to be general and to crossover all programs, it should need little updating on an annual basis. This is not the case for the program-specific questionnaires. These questionnaires are designed to collect data that specifically relate to the individual program and thus must be revised as program guidelines change.

2. If no program descriptions exist prior to the start of the evaluation, they must be developed as a first step. As the guidelines are prepared, program conditions will also be developed. This exercise requires a significant amount of time but it is highly useful in that it forces program managers to think through the overall goals and objectives of the program and to state these explicitly.

3. Specific goals for each of the program conditions must be developed. While these could be developed by an external evaluator, they will be considerably more significant if established by the program manager. The difficulty arises in that managers often view each project as totally unique and are reluctant to see the common, program-related thread in all.

4. The standard timing problems inherent in all data collection exist here. Project activities occur over some finite time period but the questionnaires must be completed by project directors at a given point in time. Distribution early in the year forces project directors to estimate future activities based on their operation plan and current activities whereas distribution late in the project year results in the collection of retrospective data, much of which might not have been recorded. Given the limitations of both, collection relatively early in the year remains the better with the major advantage being that the data can be collected, analyzed, and reported to program managers early enough

BEST COPY AVAILABLE

that corrective action can be taken and projects that are not adhering to program guidelines redirected.

5. Great care must be exercised to assure that the system is not used to collect too much data. There is a great tendency for evaluators and program managers to collect data that would be "nice to know" but for which there is not a specific need. With a system as powerful as this and with the added cost of collecting and processing additional data quite low, it is very easy for this to occur. The results of this are that the data reporting burden on respondents is significantly increased, frequently decreasing the validity of the data reported, and that the program manager receives more data than he is willing to review and analyze. The problem may be avoided if the analysis plan is developed and adhered to before the instruments are designed.

In addition to basic refinements to permit the system to function more smoothly, two further steps should be taken.

1. As discussed previously the goals as developed for the projects did not necessarily carry an equal weight with program managers yet they were treated as if this were true. A weighting scheme needs to be developed in conjunction with program managers and applied to all goals. The use of this weighting scheme would permit a true index of operational consistency to be developed that would have some quantifiable meaning in an overall evaluation sense.

2. Both the goals and the results of project performance evaluation must be stated to projects. While it is true that the program conditions are explicitly stated in the guidelines developed by each program and distributed to each grant applicant, the indication of expected minimum performance would serve to set a standard for projects to attempt to meet. Finally, the results of the evaluation should be immediately forwarded to the project directors to allow them to judge how their project is performing relative to the level of performance considered satisfactory.

BEST COPY AVAILABLE

Summary

The management and evaluation of education programs requires a timely, accurate information system. The discrepancy analysis model described aids in providing this information in a format that may be processed and yields the method by which such a system may be developed and implemented. Building from specific statements of expected project performance, this study showed how questionnaires may be developed, analysis plans prepared, and analytical reports produced to enable a reviewer to quickly learn the status of an education project. The system provides two basic types of data for decision-makers: basic descriptive information to permit statistical summaries of program operation to be prepared and reviewed, and operational consistency data which allow decision-makers to review project operations and to function by management-by-exception, concentrating their efforts on those projects most in need of technical assistance.